The opinion in support of the decision being entered today is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte KHUY V. NGUYEN,
DOANLD K. SIMMONS, RONALD W. CALL
AND SHAWN E. HUX

Appeal 2007-3962
Application 10/005,846
Technology Center 1700

Decided: September 11, 2007

Before EDWARD C. KIMLIN, CHARLES F. WARREN, and
CATHERINE Q. TIMM, *Administrative Patent Judges.*

TIMM, *Administrative Patent Judge.*

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's decision rejecting claims 1-11. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM-IN-PART.

I. BACKGROUND

The invention relates to a diffusion membrane made from a blend of an aliphatic polyolefin such as polyethylene and a thermoplastic olefin elastomer such as ethylene-propylene rubber. The claims are directed to a method, and to the membrane article made. Claims 1 and 9 are illustrative of the subject matter on appeal:

1. A method of improving the mechanical strength of a membrane comprising the step of:

providing a microporous sheet comprising a blend of an aliphatic polyolefin and a thermoplastic olefin elastomer selected from the group of ethylene-propylene rubbers, ethylene-propylene-diene terpolymer rubbers, and combinations thereof with the elastomer comprising less than 10 percent by blend weight.

9. A diffusion membrane comprising:

a dry stretched microporous sheet comprising a blend of an aliphatic polyolefin and a thermoplastic olefin elastomer, the elastomer comprising less than 10 percent by blend weight, the polyolefin being selected from the group consisting of polyethylene, polypropylene, copolymers thereof, and blends thereof, the thermoplastic olefin elastomer being selected from the group consisting of ethylene-propylene rubbers, ethylene-propylene-diene terpolymer rubbers, and combinations thereof.

The Examiner relies on the following prior art reference as evidence of unpatentability:

Kondo (as translated)	JP 10-17694	Jan. 20, 1998

The Appellants rely upon the following evidence in rebuttal:

Robert E. Kesting, *Synthetic Polymer Membranes, A Structure Perspective* 250-261 and 290-97 (2d ed. 1985).

Previously, the Examiner had rejected claims 1-3 and 6-11 solely under 35 U.S.C. § 102(b) as anticipated by Kondo, and claims 4 and 5 under 35 U.S.C. § 102(b) or, alternately, under 35 U.S.C. § 103(a) over Kondo (Answer of July 20, 2005). After the Panel Remand of September 8, 2006, the Examiner modified the rejections so that all claims, claims 1-11, were rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as being unpatentable over Kondo (Answer of November 3, 2006 at 4). A further Remand was necessary to show authorization by the Technology Center Director or his/her designee of the new ground of rejection (Remand of May 9, 2007). The Examiner issued another Answer on June 20, 2007. Appellants question whether this latest Answer contains the necessary authorization of the new ground of rejection (Reply Br. 21). We note that, such authorization is shown by the signature of the Quality Assurance Specialist, the Director designee for Technology Center 1700 (Answer of June 20, 2007 at 8). Therefore, this appeal is now in condition for our review.

Appellants now appeal from the rejection of claims 1-11 under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as being unpatentable over Kondo (Reply Br. of June 29, 2007). Appellants present separate arguments for claims 1, 8, and 9. Therefore, we consider the issues separately for each of these claims, taking into consideration the Examiner's contentions presented in the Answer of June

20, 2007 and Appellants' contentions presented in the Reply Brief of June 29, 2007.

Upon reviewing the issues on appeal, we determine that the Examiner has established a prima facie case of unpatentability with respect to the subject matter of claims 1 and 8, but not for the subject matter of claim 9. Therefore we sustain the rejection of claims 1-8, but do not sustain the rejection of claims 9-11. Our reasons follow.

II. DISCUSSION

Claim 1

Claim 1, according to its preamble, is directed to "[a] method of improving the mechanical strength of a membrane." The claim, in its body, recites a single step of "providing a microporous sheet." The sheet comprises a blend of an aliphatic polyolefin and a thermoplastic olefin elastomer from a particular group with the elastomer present in a particular range of concentrations.

Appellants admit that the microporous sheet comprising the claimed blend of polyolefin and elastomer is "a known composition of matter or material." (Reply Br. 9). But they contend that their claims are "drawn as method claims to a new use of a known composition of matter or material." (Reply Br. 8; see also Reply Br. 13). According to Appellants, Kondo does not address the problem of increasing mechanical strength of a membrane by blending elastomer into the polyolefin (Reply Br. 13).

The Examiner contends that the claim does not require an improvement arising from blending elastomer into the polyolefin (Answer

5). In other words, according to the Examiner, the claim is not limited to what is argued by Appellants.

The issue on appeal arising from the above contentions is: Giving claim 1 its broadest reasonable interpretation consistent with the Specification and reading the claim language in light of the Specification as it would be interpreted by one of ordinary skill in the art, does the preamble language "improving the mechanical strength" limit the claim in a manner that patentably distinguishes the method from what is taught by Kondo?

During examination, "claims . . . are to be given their broadest reasonable interpretation consistent with the specification, and . . . claim language should be read in light of the specification as it would be interpreted by one of ordinary skill in the art." *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364, 70 USPQ2d 1827, 1830 (Fed. Cir. 2004).

First, we note that the language "improving the mechanical strength of a membrane" occurs solely in the preamble of claim 1. Moreover, the body of the claim contains a self-contained description of the process step, i.e., the method is simply a method of providing a microporous sheet of a particular blend composition. The preamble language merely expresses a purpose of improving strength, the step of providing a microporous sheet comprising a blend is performed in the same way regardless of whether or not strength is improved. The language itself strongly suggests the independence of the preamble from the body of the claim. Our reviewing court and its predecessors have held that such preamble language is non-limiting. *See Bristol-Myers Squibb Co. v. Ben Venue Labs., Inc.*, 246 F.3d 1368, 1373-374, 58 USPQ2d 1508, 1512 (Fed. Cir. 2001) (holding that the preamble

phrase "for reducing hematologic toxicity" in a claim drawn to a method of medicating a patient was non-limiting, and merely expressing a purpose for the method); *STX LLC. v. Brine*, 211 F.3d 588, 591, 54 USPQ2d 1347, 1350 (Fed. Cir. 2000) (holding that the preamble phrase "which provides improved playing and handling characteristics" in a claim drawn to a head for a lacrosse stick was not a claim limitation); *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 480-81 (CCPA 1951).

Second, we cannot agree with Appellants that claim 1 is directed to a new use of a known composition of matter (Reply Br. 13). Appellants are correct that new uses of known processes may be patentable. *See* 35 U.S.C. § 101 (1994) ("Whoever invents or discovers any new and useful process ... may obtain a patent therefor."); and 35 U.S.C. § 100(b) (1994) ("The term 'process' means process, art or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material."). However, the claimed process here is not a method of using. Improving mechanical strength is not a use, it is a result of changing the sheet composition, for example, by adding elastomer. As admitted by Appellants, the microporous sheet is of known composition. Therefore, in the method of providing the microporous sheets of that known polyolefin and elastomer composition, one is necessarily improving the mechanical strength as required by claim 1.

Third, the word "improving" as used in claim 1 is a relative term. Appellants argue that the improved mechanical strength results from adding elastomer to the polyolefin, but the claim is not so limited. The claim is not

limited to an improvement over polyolefinic microporous sheets that do not contain the elastomer.

Giving claim 1 its broadest reasonable interpretation consistent with the Specification and reading the claim language in light of the Specification as it would be interpreted by one of ordinary skill in the art, we determine that the preamble language "improving the mechanical strength" defines a result of the process and does not affirmatively limit the claimed method.

What the prior art must teach then is a method of providing a microporous sheet of the claimed blend composition. Appellants admit that such sheets were known in the art. Appellants have, therefore, not shown that the Examiner reversibly erred in rejecting claim 1 as anticipated.

We turn our attention to the Appellants' contention that the Examiner erred in rejecting claim 1 as obvious over Kondo (Reply Br. 12-18). Appellants' contention is not convincing for the following reasons.

Kondo describes providing a microporous membrane which is a blend of polyethylene (aliphatic polyolefin) with no more than 30% polyolefin such as EPR (ethylene-propylene rubber as claimed) (Kondo ¶ 0013). The membrane is intended for use as a separator in high capacity batteries, and polyethylene is used because of its mechanical strength and permeability properties (Kondo ¶ 0002).

The concentration range of Kondo (no more than 30%) encompasses the claimed range (less than 10%). The Examiner determines that it would have been within the ordinary skill in the art to optimize the concentration of the elastomer to obtain the desired benefits of the blend (Answer 5). Appellants contend that Kondo does not teach any benefit to adding the EPR

(Reply Br. 15), and that the concentration would not have been recognized as a "result-effective" variable that could be optimized (Reply Br. 16-18). The issue is: Have Appellants overcome the rejection by showing that one of ordinary skill in the art would not have recognized the concentration of elastomer or EPR as a result-effective variable to be optimized?

"On appeal to the Board, an applicant can overcome a rejection by showing insufficient evidence of prima facie obviousness or by rebutting the prima facie case with evidence of secondary indicia of nonobviousness." *In re Kahn*, 441 F.3d 977, 985-86, 78 USPQ2d 1329, 1335 (Fed. Cir. 2006) (emphasis omitted).

Optimization of a variable which is recognized in the prior art as a result-effective variable would ordinarily be within the skill in the art. *In re Boesch*, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980). Whether optimization of a parameter would have been prima facie obvious depends upon what the prior art discloses with respect to that parameter.

Here, Kondo describes forming a microporous sheet for the same purpose, a battery separator, and describes a range of concentrations (less than 30%) encompassing the claimed concentration (less than 10%). The fact that Kondo discloses a range of concentrations rather than specific values of concentration indicates, in itself, that the concentration was viewed as a result-effective variable. The obviousness of the optimization of a range or other variable within the claims flows from the "normal desire of scientists or artisans to improve upon what is already generally known." *In re Peterson*, 315 F.3d 1325, 1330, 65 USPQ2d 1379, 1382-383 (Fed. Cir.

2003) (determining where in a disclosed set of percentage ranges the optimum combination of percentages lies is prima facie obvious).

While Kondo does not disclose the exact effect one of ordinary skill in the art would expect to obtain from adding EPR to the polyethylene, it is evidenced from the context of the disclosure within the reference that the effect was known to those of ordinary skill in the art. In fact, Appellants' own Specification indicates that elastomers were known to improve the mechanical strength of polyethylene films (Specification 3:1-8). "The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *KSR*, 127 S. Ct. 1727, 1739, 82 USPQ2d 1385, 1395 (2007). The question to be asked is "whether the improvement is more than the predictable use of prior art elements according to their established functions." *KSR*, 127 S. Ct. at 1740, 82 USPQ2d at 1396.

In this case, the disclosure of the broader range in Kondo shifted the burden to Appellants to show that the invention would not have been obvious such as by showing "the improvement was more than the predictable use of prior art elements according to their established functions, *KSR*, 127 S. Ct. at 1740, 82 USPQ2d at 1396, i.e., by showing results unexpected by those of ordinary skill in the art for the narrower claimed range. *Peterson*, 315 F.3d at 1330, 65 USPQ2d at 1383. Appellants do not present any evidence of secondary indicia of non-obviousness such as unexpected results.

Claim 8

Turning to claim 8, Appellants contend that the Examiner admits that Kondo is silent with regard to the Gurley air permeability of the membrane, and, therefore, Kondo does not anticipate claim 8 because Kondo does not teach all the elements of the claim (Reply Br. 9). With regard to the obviousness of claim 8, Appellants do not argue claim 8 apart from claim 1 (Reply Br. 13-18).

Claim 8 recites a method with a step of providing a microporous sheet having a Grurley air permeability less than 35 seconds/10cc. The Examiner finds that the Gurley air permeability is either anticipated by Kondo, or an obvious optimization motivated by the desired to provide the required permeability for use as a battery separator (Answer 5).

Appellants have not shown a reversible error in the Examiner's rejection. Appellants do not dispute the Examiner's determination of obviousness. Kondo describes air permeability as an important property and discloses a range of workable permeabilities (Kondo ¶¶ 0013 and 0015). The evidence supports the Examiner's determination that it would have been obvious to one of ordinary skill in the art to have optimized the air permeability for the membrane.

Moreover, Kondo describes microporous sheets having specific air permeabilities (Kondo, Table 1). The air permeabilities are determined with a Gurley air permeability meter based on JIS P-8117 and reported in terms of 25 micron membrane thickness (Kondo ¶ 0027), a different basis than that claimed. It is reasonable to conclude that the air permeability values of Table 1 are within Appellants' range based on the similarities in the porosity

and intended use of the sheets. Therefore, the burden has shifted to Appellants to show, in fact, that the permeability is indeed outside the claimed range. *See In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977) (When a claimed product appears to be substantially identical to a product disclosed by the prior art, the burden is on the Applicants to prove that the product of the prior art does not necessarily or inherently possess characteristics or properties attributed to the claimed product.); *In re Skoner,* 517 F.2d 947, 950, 186 USPQ 80, 82 (CCPA 1975) (Merely choosing to describe an invention in a different manner does not render a method patentable).

Claim 9

While Appellants have not established a reversible error with respect to the rejection of claims 1 and 8, they have established that such an error was made with respect to claim 9.

Turning to claim 9, we note that this claim is directed to a diffusion membrane comprising "a dry stretched microporous sheet." As found by the Examiner, Kondo describes biaxially stretching the sheet with tenters (Kondo ¶ 0018). The Examiner finds that this is a dry stretch process meeting the requirements of Appellants' claim (Answer 4). Appellants contend that the claimed "dry stretched" sheet is different from the sheet of Kondo because Kondo forms the micropores by extracting a plasticizer from the sheet rather than forming the pores by dry stretching, the two processes resulting different physical structures (Reply Br. 9-10). As evidence that the structures are different, Appellants rely upon the disclosure of the dry stretch or Celgard® process described in "Synthetic Polymer Membranes, A

Structural Perspective" by Kesting. The Examiner contends that Appellants have not defined "dry stretched" in the Specification, nor does Kesting provide a definition and, therefore, the claim 9 encompasses membranes made using the biaxial stretching step of Kondo (Answer 6).

The issue on appeal arising from the contentions of Appellants and the Examiner is: Does "dry stretched microporous sheet" as used in claim 9 refer to a sheet different in structure from the plasticizer extracted, biaxial stretched sheet of Kondo? We answer in the affirmative.

Appellants have provided evidence that "dry stretching" has a specific meaning in the art of microporous membrane manufacture synomous with the Celgard® process of Kesting (Specification 2:1-9), and Appellants use that phrase to differentiate from phase inversion or extraction methods of forming the pores within the sheet (Specification 4: 17-21).

"[I]t is fundamental that claims are to be construed in the light of the specifications and both are to be read with a view to ascertaining the invention." *United States v. Adams*, 383 U.S. 39, 49, 86 S. Ct. 708, 15 L.Ed.2d 572 (1966). While claim terms are given their broadest reasonable meaning, that meaning is the meaning is determined "in light of the specification as it would be interpreted by one of ordinary skill in the art." *See In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364, 70 USPQ2d 1827, 1830 (Fed. Cir. 2004). Even if there is no explicit definition of the terms in the specification, it would be unreasonable to ignore any interpretive guidance afforded by the Specification. *See In re Morris*, 127 F.3d 1048, 1054-055, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997).

The Examiner has, in interpreting the claim, divorced the word "dry" from "stretching" and ignored the specific meaning those two terms, when used together, were meant to have as evidenced by the Specification and as understood by those in the membrane art as evidenced by Kesting. "It is well established that when a general term is used to introduce a concept that is further defined more narrowly, the general term must be understood in the context in which the inventor presents it." *In re Glaug*, 283 F.3d 1335, 1340, 62 USPQ2d 1151, 1154 (Fed. Cir. 2002). Here, Appellants present the phrase in the context of how the pores are formed: They are formed by the stretching of a polyolefin film with aligned microcrystalites formed by the specific extrusion and annealing process described in Kesting. The resulting structure is shown in Kesting Figure 8.6. The Examiner has not established that extracting the plasticizer of Kondo would result in the "dry stretched" structure claimed.

III. CONCLUSION

We sustain the rejection of claims 1-8 as unpatentable over Kondo, but do not sustain the rejection of claims 9-11 over that reference.

IV. DECISION

Accordingly, the decision of the Examiner is affirmed-in-part.

V. TIME PERIOD FOR RESPONSE

No time period for taking any subsequent action in connection with this appeal maybe extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED-IN-PART

cam

HAMMER & HANF, PC
3125 SPRINGBANK LANE, SUITE G
CHARLOTTE, NC 28226